

129:191543 **Nonaqueous electrolyte batteries** containing covalent bonded crystal alloys. Inamasu, Tokuo; Iguchi, Takaki (Yuasa Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10208740 A2 19980807 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-11115 19970124.

AB Claimed **batteries** use **anodes** from alloys contg. a covalent bonded crystal and Li. Preferably, the covalent bonded crystal is a Si single crystal. The **batteries** have good charging-discharging characteristics.

IT 211746-67-7P  
(**anodes** contg. covalent bonded crystal-Li alloys for **nonaq. batteries**)

RN 211746-67-7 HCA

CN Silicon alloy, base, Si 97, Li 2.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Si	97	7440-21-3
Li	2.7	7439-93-2

IC ICM H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

ST covalent bond crystal lithium alloy **anode; battery**  
lithium silicon single crystal

IT **Battery anodes**  
(**anodes** contg. covalent bonded crystal-Li alloys for **nonaq. batteries**)

IT Secondary **batteries**  
(lithium; **anodes** contg. covalent bonded crystal-Li alloys for **nonaq. batteries**)

IT 117219-39-3P 211746-67-7P 211746-68-8P  
(**anodes** contg. covalent bonded crystal-Li alloys for **nonaq. batteries**)

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127:265561 Secondary **nonaqueous electrolyte batteries**  
. Miyasaka, Tsutomu (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09245836 A2 19970919 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-51177 19960308.

AB The **batteries** use spinel type Li Mn oxide **cathode** active mass, **nonaq.** electrolyte and Li intercalating alloy based **anode** active mass; where the **cathode** active mass has a compn.  $\text{Li}_x\text{Mn}_2\text{-aMa/cO}_4\text{+b}$  ( $\text{M} = \text{metal ion}$ ,  $0.1 < x \leq 1.2$ ,  $0 \leq a < 2$ ,  $1 \leq c \leq 3$ , and  $0 \leq b \leq 0.3$ ) in charge-discharge cycles and has a protection film, having no electron cond., at its interface with the electrolyte. The protection film may be  $\text{Al}_2\text{O}_3$ ,  $\text{TiO}_2$ , and/or  $\text{ZrO}_2$ ; M is selected from Zr, Nb, lanthanides, Na, K, Mg, Ca, or Cs; and the **anode** active mass is an alloy contg. Al, Mg, B, Sb, Bi, Si, Ge, Cu, Ti, Ga, and/or In. These **batteries** have high capacity.

IT 84723-38-6  
 (anodes for secondary lithium batteries  
 contg. spinel type lithium manganese oxide cathodes and  
 cathode protection films)

RN 84723-38-6 HCA  
 CN Silicon alloy, base, Si 52, Li 48 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Si	52	7440-21-3
Li	48	7439-93-2

IC ICM H01M010-40  
 ICS H01M010-40; H01M004-02; H01M004-58  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery cathode protection film; alumina  
 protection film lithium battery cathode; titania  
 protection film lithium battery cathode;  
 zirconia protection film lithium battery cathode  
 ; manganese lithium oxide cathode protection film  
 IT Battery cathodes  
 (compns. of cathodes and protection films for  
 cathodes in secondary lithium batteries)  
 IT Secondary batteries  
 (secondary lithium batteries contg. cathode  
 protection films)  
 IT 12008-29-6, Boron silicide (B6Si) 12338-02-2 22831-39-6,  
 Magnesium silicide (Mg2Si) 84723-38-6 120536-36-9  
 195967-34-1 195967-37-4  
 (anodes for secondary lithium batteries  
 contg. spinel type lithium manganese oxide cathodes and  
 cathode protection films)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 113066-89-0, Cobalt  
 lithium nickel oxide (Co0.2LiNi0.8O2)  
 (auxiliary active mass in lithium manganese oxide  
 cathodes contg. protection films for secondary lithium  
 batteries)  
 IT 189166-92-5, Cobalt lithium manganese oxide (Co0.05Li1.02Mn1.95O4)  
 189166-98-1, Chromium lithium manganese oxide (Cr0.05Li1.02Mn1.95O4)  
 195967-18-1, Iron lithium manganese oxide (Fe0.05Li1.02Mn1.95O4)  
 195967-22-7, Copper lithium manganese oxide (Cu0.05Li1.02Mn1.95O4)  
 195967-25-0, Aluminum lithium manganese oxide (Al0.05Li1.02Mn1.95O4)  
 195967-28-3, Lithium magnesium manganese oxide  
 (Li1.02Mg0.05Mn1.95O4) 195967-30-7, Lithium manganese sodium oxide  
 (Li1.02Mn1.95Na0.05O4) 195967-32-9, Lithium manganese neodymium  
 oxide (Li1.02Mn1.95Nd0.05O4)  
 (compns. of cathodes and protection films for  
 cathodes in secondary lithium batteries)  
 IT 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 13463-67-7,  
 Titanium oxide (TiO2), uses  
 (protection films for lithium manganese oxide cathodes)

in secondary lithium batteries)

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122:295306 Secondary **nonaqueous batteries** with lithium intercalating silicon **anodes** and their manufacture. Sasaki, Tomio; Sakai, Tsugio; Tawara, Kensuke (Seiko Instr & Electronics, Japan; Seiko Electronic Components). Jpn. Kokai Tokkyo Koho JP 07029602 A2 19950131 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-173313 19930713.

AB The **batteries** use  $\text{Li}_x\text{Si}$  ( $x \leq 0.5$ ) **anodes**, transition metal oxide **cathodes**, and  $\text{Li}^+$  conductive **nonaq.** electrolytes. The  $\text{Li}_x\text{Si}$  is preferably amorphous and the **cathodes** may be  $\text{Li}_a\text{MbLcO}_2$ , where M = transition metal, L = B and/or Si,  $0 < a \leq 1.15$ ,  $0.85 \leq (b + c) \leq 1.3$ , and  $0 \leq c$ . The **batteries** are prepd. by electrochem. intercalating Li in Si during the manuf. process or after the assembling of the **batteries**.

IT 163294-90-4, Lithium silicide ( $\text{LiO-5Si}$ )  
(lithium intercalating silicon **anodes** and their manuf. for **batteries**)

RN 163294-90-4 HCA

CN Lithium silicide ( $\text{LiO-5Si}$ ) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Si	1	7440-21-3
Li	0 - 5	7439-93-2

IC ICM H01M010-40

ICS H01M004-02; H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** lithium silicide **anode**

IT **Batteries**, secondary

(lithium silicide/boron- or silicon-contg. cobalt lithium oxide)

IT **Anodes**

(**battery**, lithium intercalating silicon **anodes** and their manuf. for **batteries**)

IT 154471-92-8, Cobalt lithium borate oxide ( $\text{Co}_{0.9}\text{Li}(\text{BO}_3)_0.1\text{O}_{1.7}$ )

163219-55-4, Cobalt lithium oxide silicate ( $\text{Co}_{0.9}\text{LiO}_{1.6}(\text{SiO}_4)_0.1$ )

(**cathodes** for **batteries** with lithium intercalating silicon **anodes**)

IT 96-49-1, Ethylene carbonate

(electrolyte solvents for **batteries** with lithium intercalating silicon **anodes**)

IT 163294-90-4, Lithium silicide ( $\text{LiO-5Si}$ )

(lithium intercalating silicon **anodes** and their manuf. for **batteries**)

IT 7440-21-3, Silicon, uses

(lithium intercalating silicon **anodes** and their manuf. for **batteries**)

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112:220375 **Nonaqueous** lithium alloy **battery**.

Furukawa, Nobuhiro; Yoshimura, Seiji; Takahashi, Masatoshi (Sanyo Electric Co., Ltd., Japan). Eur. Pat. Appl. EP 349675 A2 19900110, 48 pp. DESIGNATED STATES: R: CH, DE, FR, GB, LI, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1988-119035 19881115. PRIORITY: JP 1988-165724 19880701; JP 1988-165725 19880701; JP 1988-165726 19880701.

AB The **battery** includes an electrolyte of  $\text{LiF3CSO3}$  and org. solvent mixt. of .gtoreq.2 high b.p. solvents and including .gtoreq.1 cyclic carbonate. The solvent mixt. comprises ethylene carbonate (EC), butylene carbonate, and DME; EC, .gamma.-butyrolactone, and DME; or propylene carbonate, sulfolane, and THF. The **battery cathode** is selected from oxides, sulfides, and halides.  $\text{LiF3CSO3}$  is heated, dried, and dehydrated in a vacuum at 80-150.degree.. The electrolyte contains an inhibitor for inhibiting reaction between the **battery** can and the electrolyte. The inhibitor is selected from  $\text{LiNO3}$ ,  $(\text{EtO})_3\text{PO}$ ,  $(n\text{-BuO})_3\text{PO}$ , N,N,N',N'-tetramethyl ethylenediamine, etc.

IT 75418-59-6

(**anodes, batteries** contg., electrolytes for)

RN 75418-59-6 HCA

CN Lithium alloy, base, Li,Si (9CI) (CA INDEX NAME)

Component	Component Registry Number
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=====+=====

Li	7439-93-2
Si	7440-21-3

IC ICM H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery** electrolyte solvent mixt; carbonate cyclic electrolyte lithium **battery**; oxide lithium **nonaq battery**; inhibitor lithium **nonaq battery**; trifluoromethanesulfonate lithium **nonaq battery**

IT **Batteries**, primary

(button-type, lithium alloy, with **nonaq.** electrolyte contg. lithium trifluoromethanesulfonate and cyclic carbonate)

IT 71849-42-8 71849-43-9, Lithium base, tin 72785-69-4 72785-91-2 72785-92-3 75418-59-6 77194-65-1, Calcium, lithium base 77194-67-3, Lithium base, strontium 77194-68-4, Barium, lithium base 77194-70-8 97838-40-9, Gallium, lithium base 97838-42-1 (**anodes, batteries** contg., electrolytes for)

IT 1313-13-9, Manganese dioxide, uses and miscellaneous 1313-27-5, Molybdenum oxide ( $\text{MoO3}$ ), uses and miscellaneous 1314-62-1, Vanadium oxide ( $\text{V2O5}$ ), uses and miscellaneous 1317-33-5, Molybdenum disulfide, uses and miscellaneous 1317-37-9, Iron sulfide ( $\text{FeS}$ ) 1317-38-0, Copper oxide ( $\text{CuO}$ ), uses and miscellaneous 11113-63-6, Graphite fluoride 11118-57-3, Chromium oxide 12039-13-3, Titanium disulfide (**cathodes, lithium alloy batteries** contg.,

- electrolytes for)
- IT 78-40-0, Triethyl phosphate 110-18-9 126-73-8, Phosphoric acid tributyl ester, uses and miscellaneous 147-84-2, reactions 150-61-8 7790-69-4, Lithium nitrate 7803-65-8 127204-51-7 (corrosion inhibitors, electrolyte contg., for **nonaq.** lithium alloy **batteries**)
- IT 96-48-0, .gamma.-Butyrolactone 96-49-1, 1,3-Dioxolan-2-one 108-32-7, Propylene carbonate 109-99-9, THF, uses and miscellaneous 110-71-4 126-33-0, Sulfolane 4437-85-8, Butylene carbonate (electrolyte solvents contg., for lithium trifluoromethanesulfonate, in lithium alloy **batteries**)

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111:61014 **Battery** with nonsolution lithium alloy **anode** and **nonaqueous** electrolyte. Harris, Peter B.; Bennett, James; Lechiaro, Kathy M.; Morello, Peter F.; McDonald, Robert C. (Whittaker Technical Products, Inc., USA). U.S. US 4818645 A 19890404, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1987-126326 19871130.

AB The **battery** comprises an **anode** of Li alloyed with 0.5-20% Mo or 0.5-10% W, a **cathode** current collector, and a catholyte. Various Li alloy **batteries** with 0.9M LiAlCl<sub>4</sub> in SOCl<sub>2</sub> catholyte were prepd. and their performance was detd.

IT 121728-25-4 (anodes, nonsoln., for **batteries** with thionyl chloride catholyte)

RN 121728-25-4 HCA

CN Lithium alloy, base, Li 60-95, Si 5-40 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Li	60 - 95	7439-93-2
Si	5 - 40	7440-21-3

IC ICM H01M004-40

ICS H01M006-14

NCL 429209000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium alloy thionyl chloride **battery**

IT **Batteries**, primary (lithium alloy-thionyl chloride)

IT **Anodes** (**battery**, lithium alloy, nonsoln.)

IT 121728-23-2 121728-24-3 121728-25-4 121787-47-1 (anodes, nonsoln., for **batteries** with thionyl chloride catholyte)

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104:227731 Composite **anode** for secondary **nonaqueous**